Completed Pollution Prevention Project Case Study

United States Department of Energy
Office of Environmental Management
Fact Sheet

Plutonium-238 Waste Reduction

Los Alamos National Laboratory

Original Problem

As part of the process to create plutonium-238 ingots to act as heat generators for spacecraft, various plastic instruments and containers deteriorate and must be disposed of as transuranic waste.

The Project Solution

A team in the Nuclear Materials Technology Division developed a cast saw that would fit into a glovebox where plutonium-238 ingots are produced. As the plastic bottles wore out and became waste, the cast saw was used to cut the bottles into smaller pieces. This action cut the volume of contaminated plastic by nearly half. The original inspiration for the improvement arose when a team member's son had a plaster cast removed from his arm at the hospital.

Value of Improvement

Since the cost of disposing of transuranic waste is based on volume, reducing the volume of the bottles saves approximately $56,000 annually in disposal costs. Disposal space is saved as well because the same amount of transuranic waste is compacted into a smaller volume. The cast saw decreases the amount of plastic transuranic waste generated by the plutonium-238 ingot production procedure by approximately 45%.

Lifecycle Waste Reduction	
Lifecycle Waste Reduction	~45% less plastic TRU waste by volume
Commencement Date	2001
Project Useful Life (Years)	10+

DOE Monetary Benefits	
Total Project Cost	~$10,000
Lifecycle Savings	~$56,000 per year
Return on Investment	NA

Benefits At-A-Glance

- The cast saw reduces the physical volume of waste plastic bottles that are generated during the manufacturing of plutonium-238 ingots. The volume of plastic transuranic waste created by this process has decreased by about 45%.
- Since the cost of disposal for transuranic waste is related to volume, reducing the volume saves about $56,000 annually on waste disposal fees.

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Summary Data	
Priority Area:	Waste Minimization Projects
Project Type:	Process Improvement
Total Project Cost:	~$10,000
Lifecycle Savings:	~$56,000 per year
Implementing Group:	NMT-9
Benefiting Group:	NMT-9
Useful Life Years:	10+
Return on Investment:	NA
Lifecycle Waste Reduction:	~45% less plastic transuranic waste by volume
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